

### REMARKS

In response to the office action mailed on February 22, 2010 ("Office Action"), Applicants have amended claims 4, 16, 23, 36, 38, and 40. Support for this amendment can be found at, e.g., page 5, lines 8-17 of the specification. No new matter has been introduced by the above amendments. Claims 54-56 have been withdrawn by the Examiner as being directed to non-elected species. Applicants reserve the right to rejoin these three claims upon allowance of generic claim 1, from which these three claims depend. Claims 1, 3, 4, 6, 7, 9-16, 20-25, 27, 28, 30-51, and 53 are presented for examination.

Initially, Applicants would like to thank the Examiner and his supervisor for the telephone interview with their counsel held on May 27, 2010. During the interview, the patentability of independent claims 1, 4, 7, 16, 23, 36, 38, and 40 was discussed in view of the prior art cited in the Office Action. A letter dated May 24, 2010 was sent to the Examiner to facilitate discussion in the interview. A copy of this letter is attached hereto as "Exhibit A" to serve as a partial summary of the interview. During the interview, an agreement was reached that independent claims 1 and 7 are patentable over the cited prior art as is and independent claims 4, 16, 23, 36, 38, and 40 would be patentable over the cited prior art if they are amended to cover a photovoltaic device in which the organic semiconductor layer or the organic semiconductor is not structured for increasing light absorptivity. In addition, the Examiner graciously indicated that he would rejoin withdrawn claims 54-56 upon allowance of generic claim 1. Other points discussed during the interview are summarized below.

Claims 1, 3, 4, 6, 7, 9-16, 20-25, 27, 28, 30-51, and 53 are rejected under 35 U.S.C. §103(a) as being unpatentable over Fujimori in view of Saurer, either alone or in combination with Shaheen.

Applicants discuss independent claims 1 and 7 first. Each of claims 1 and 7 recites a photovoltaic component or cell including a substrate having a structured surface and a first electrode having a planar surface, where the first electrode is between the substrate and an organic semiconductor layer.

In the Office Action, the Examiner correctly points out that "Fujimori does not explicitly disclose whether the first surface of the substrate is structured," and relies on Saurer to provide this limitation. Specifically, the Examiner states that "Saurer teaches a photovoltaic device

(photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the first surface of the substrate (2) is structured (see fig. 2; col. 3, lines 55-62).” *See, e.g.*, the Office Action, page 5, 1<sup>st</sup> paragraph.

However, Saurer discloses a photovoltaic that includes not only a structured substrate, but also a structured electrode and a structured semiconductor layer. Specifically, Saurer states that

“[t]he object of the invention is therefore a photovoltaic cell comprising a substrate having a support face on which there is disposed a first electrode, a second electrode insulated from the first electrode by a plurality of layers having at least a first layer of a semiconducting material with an active junction at an interface thereof, characterised in that said active junction exhibits a developed surface area greater than its projected surface area.”

*See* column 1, lines 49-57. In other words, Saurer's objective is to provide a photovoltaic cell in which a semiconductor material layer includes an active junction having a developed surface area, which is interpreted by the Examiner as a structured layer (*see, e.g.*, the Office Action, page 5, 1<sup>st</sup> paragraph). In addition, Saurer states that

“the support face 4 of the substrate 2 exhibits a developed surface area greater than its projected surface area. The following layers which extend successively on the substrate 2 closely embrace the configuration in relief of the support face 4 in such a way that the texture of the face 4 of the substrate 2 results in the active junction J having a developed surface area greater than its projected surface area.”

*See* column 3, lines 55-62 and Fig. 2. In other words, Saurer teaches that, to achieve its objective, a structured semiconductor material layer (i.e., having the active junction J having a developed surface) is prepared by forming a substrate 2 having a structured face 4 and applying additional layers (e.g., a first electrode 6 and a first layer 14 of a semiconductor material) onto substrate 2 that “closely embrace” the configuration of the structured face 4. It follows that both the first layer 14 of a semiconductor material and the first electrode 6 described in the embodiment above in Saurer are structured. Saurer does not disclose or render obvious a photovoltaic component or cell including a substrate having a structured surface but a first electrode having a planar surface, where the first electrode is between the substrate and an organic semiconductor layer, as required by claims 1 and 7. To the contrary, Saurer discloses an electrode between a substrate and a semiconductor layer that is structured and therefore does not have a planar surface. Thus, Saurer does not cure the deficiencies in Fujimori. In addition,

Shaheen is relied on by the Examiner to provide a photovoltaic cell having a conjugated polymer and an acceptor, and is entirely silent on a photovoltaic cell having a structured layer. Thus, Shaheen also does not cure the deficiencies in Fujimori. Finally, during the telephone interview on May 27, 2010, the Examiner agreed that claims 1 and 7 are patentable over Fujimori, Saurer, and Shaheen as is.

In sum, claims 1 and 7 would not have been obvious over Fujimori in view of Saurer and Shaheen.

Applicants turn now to independent claims 4, 16, 23, 36, 38, and 40. Each of these claims, as amended, recites a photovoltaic component or cell including a substrate having a structured surface and an organic semiconductor layer or an organic semiconductor that is not structured for increasing light absorptivity. None of Fujimori, Saurer, and Shaheen discloses or renders obvious such a photovoltaic component or cell. Indeed, Saurer is the only cited reference that discloses a photovoltaic cell having a structured layer. However, as discussed above, the photovoltaic cell described in Saurer includes a structured semiconductor layer for increasing the efficiency in collecting incident photons (see, e.g., column 1, lines 58-59), which is significantly different from the photovoltaic component or cell recited in claims 4, 16, 23, 36, 38, and 40. During the telephone interview on May 27, 2010, the Examiner agreed that the above amendment to claims 4, 16, 23, 36, 38, and 40 would overcome the obviousness rejections based on Fujimori, Saurer, and Shaheen.

Thus, claims 4, 16, 23, 36, 38, and 40 would not have been obvious over Fujimori in view of Saurer and Shaheen.

Since 3, 6, 9-15, 20-22, 24, 25, 27, 28, 30-35, 37, 39, 41-51, and 53 depend from claim 1, 4, 7, 16, 23, 36, 38, or 40, they also would not have been obvious over Fujimori in view of Saurer and/or Shaheen.

Accordingly, Applicants request reconsideration and withdrawal of these rejections.

Applicants submit that all pending claims are now in condition for allowance, an action of which is requested.

Any circumstance in which Applicants have: (a) addressed certain comments of the Examiner does not mean that Applicants concede other comments of the Examiner; (b) made arguments for the patentability of some claims does not mean that there are not other good

Applicant : Christoph Brabec et al.  
Serial No. : 10/525,058  
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reasons for the patentability of those claims and other claims; or (c) amended or canceled a claim does not mean that Applicants concede any of the Examiner's positions with respect to that claim or other claims.

The \$130.00 fee for the Petition for One-Month Extension of Time is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges to deposit account 06-1050, referencing Attorney's Docket No. 15626-0048US1.

Respectfully submitted,

Date: June 9, 2010

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# EXHIBIT A



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May 24, 2010

Examiner Golam Mowla  
U.S. Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

Re: ORGANIC PHOTOVOLTAIC COMPONENT AND METHOD FOR  
PRODUCTION THEREOF

Application No.: 10/525,058  
Our Ref.: 15626-0048US1



ATLANTA

BOSTON

DALLAS

DELAWARE

HOUSTON

MUNICH

NEW YORK

SILICON VALLEY

SOUTHERN CALIFORNIA

TWIN CITIES

WASHINGTON, DC

Dear Examiner Mowla:

Thank you for granting a telephone interview, scheduled for Thursday, May 27, 2010 at 1:30 PM, to discuss the office action dated February 22, 2010 ("Office Action"). This letter outlines what we would like to discuss with you during the telephone interview.

In the Office Action, claims 1, 3, 4, 6, 7, 9-17, 20-25, 27, 28, 30-51, and 53 are rejected as being obvious over Fujimori in view of Saurer and/or Shaheen. Among the rejected claims, claims 1, 4, 7, 16, 23, 36, 38, and 40, are independent. We first discuss independent claims 1, 7, 16, and 23, each of which recites a photovoltaic component or cell including a substrate having a structured surface, as well as a first electrode having a planar surface or an organic semiconductor layer having a planar surface.

Saurer is the only cited reference that discloses a photovoltaic cell having a structured layer. The Office Action states that "Saurer teaches a photovoltaic device (photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the first surface of the substrate (2) is structured (see fig. 2; col. 3, lines 55-62)." See, e.g., page 5, 1<sup>st</sup> paragraph.

However, Saurer discloses a photovoltaic that includes not only a structured substrate, but also a structured electrode and a structured semiconductor layer. Specifically, Saurer states that "[t]he object of the invention is therefore a photovoltaic cell comprising a substrate having a support face on which there is disposed a first electrode, a second electrode insulated from the first electrode by a plurality of layers having at least a first layer of a semiconducting material with an active junction at an interface thereof, characterised in that said active junction exhibits a developed surface area greater than its projected surface area." See column 1, lines 49-57. In other words, Saurer's objective is to provide a photovoltaic cell in which a

Examiner Golam Mowla

May 24, 2010

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semiconductor material layer includes an active junction having a developed surface area, which is interpreted by the Office Action as a structured layer (*see, e.g.,* page 5, 1<sup>st</sup> paragraph).

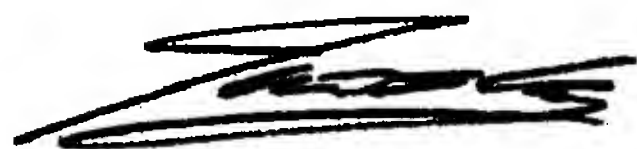
In addition, Saurer states that "the support face 4 of the substrate 2 exhibits a developed surface area greater than its projected surface area. The following layers which extend successively on the substrate 2 closely embrace the configuration in relief of the support face 4 in such a way that the texture of the face 4 of the substrate 2 results in the active junction J having a developed surface area greater than its projected surface area." *See* column 3, lines 55-62 and Fig. 2. In other words, Saurer teaches that, to achieve its objective, a structured semiconductor material layer (i.e., having the active junction J having a developed surface) is prepared by forming a substrate 2 having a structured face 4 and applying additional layers (e.g., a first electrode 6 and a first layer 14 of a semiconductor material) onto substrate 2 that closely embrace the configuration of the structured face 4. It follows that both the first layer 14 of a semiconductor material and the first electrode 6 described in embodiment above are structured (i.e., without a planar surface).

Saurer does not disclose a photovoltaic component or cell including a substrate having a structured surface, but a first electrode having a planar surface or an organic semiconductor layer having a planar surface, as required by claims 1, 7, 16, and 23. Nor do the other two cited references, i.e., Fojimori and Shaheen. Thus, claims 1, 7, 16, and 23 are would not have been obvious over Fujimori in view of Saurer and/or Shaheen.

Turning to the other independent claims, we are willing to incorporate the phrase "the first electrode has a planar surface" into claim 4 and the phrase "the organic semiconductor layer is not structured" into claims 36, 38, and 40. Support for the latter amendment can be found at page 5, lines 12-17 of the application. We believe that these amendment should overcome the obviousness rejection of these four claims.

I look forward to speaking to you and your supervisor.

Very truly yours,



Tony Zhang, Ph.D.

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